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TITLE OF THE INVENTION

REPAIR REQUEST HANDLING METHOD AND REPAIR REQUEST
HANDLING APPARATUS

CROSS-REFERENCE TO RELATED APPLICATIONS

5 This is a Continuation Application of PCT
Application No. PCT/JP01/02065, filed March 15, 2001,
which was not published under PCT Article 21(2) in
English.

10 This application is based upon and claims the
benefit of priority from the prior Japanese Patent
Application No. 2000-076978, filed March 17, 2000,
the entire contents of which are incorporated herein by
reference.

BACKGROUND OF THE INVENTION

15 1. Field of the Invention

 The present invention relates to a repair request
handling method and repair request handling apparatus
for using Internet, and the like to accept a repair
request from a client terminal and perform a process
20 corresponding to a repair.

 2. Description of the Related Art

 The present invention relates to a repair request
handling method and repair request handling apparatus
for using Internet, and the like to accept a repair
25 request from a client terminal and perform a process
corresponding to a repair.

 In a conventional system, for example, when a

client requests a maker, and the like to repair a home electric appliance, and the like, the client contacts a service center by telephone, and the like. It is then determined that a serviceman comes from the service center to diagnose a trouble of a trouble product and repair the product on the site, or that the trouble product is sent to the service center and the trouble is diagnosed and the product is repaired in the service center. In this case, the service center checks stock of a trouble component, and the like as the occasion demands, and informs the client of cost estimate and date of delivery by telephone, and the like.

However, this system imposes a large burden on the client, the repair takes much time, and a sufficient service to the client cannot be realized.

Therefore, an object of the present invention is to provide a repair request handling method and repair request handling apparatus in which a client can easily make a request for repair, a client's desire for purchase of a new product because of a breakage can be handled if any, therefore a service to the client is sufficiently enhanced, and a maker can quickly fulfill repair business and repair operation.

BRIEF SUMMARY OF THE INVENTION

In a repair request handling method of the present invention, a client can easily make a request for repair, a client's desire for purchase of a new product

because of a breakage can be handled if any, therefore a service to the client is sufficiently enhanced, and a maker can quickly fulfill repair business and repair operation.

5 In a repair request handling apparatus of the present invention, the client can easily make a request for repair, the client's desire for purchase of the new product because of the breakage can be handled if any, therefore the service to the client is sufficiently
10 enhanced, and the maker can quickly fulfill repair business and repair operation.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

FIG. 1 is a diagram showing an embodiment of the present invention, and a block diagram showing a whole
15 constitution of a repair request handling system.

FIG. 2 is an explanatory view of operation of a repair request handling apparatus with respect to an access from a client terminal in the embodiment.

FIG. 3 is a diagram showing one screen of a home
20 page in the embodiment.

FIG. 4 is a diagram showing another screen of the home page in the embodiment.

FIG. 5 is a diagram showing another screen of the home page in the embodiment.

25 FIG. 6 is a diagram showing another screen of the home page in the embodiment.

FIG. 7 is a diagram showing another screen of the

home page in the embodiment.

FIG. 8 is a diagram showing another screen of the home page in the embodiment.

FIG. 9 is a diagram showing another screen of the home page in the embodiment.

FIG. 10 is a diagram showing another screen of the home page in the embodiment.

FIG. 11 is a diagram showing another screen of the home page in the embodiment.

FIG. 12 is a diagram showing another screen of the home page in the embodiment.

FIG. 13 is a diagram showing another screen of the home page in the embodiment.

FIG. 14 is a flowchart showing an operation of a time of repair request in the embodiment.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 is a block diagram showing a whole constitution of a repair request handling system.

Internet 1 is connected to a repair request handling apparatus 2 including a main server possessed by a maker, and the repair request handling apparatus 2 is connected to a sales division terminal 4, manufacturing division terminal 5, planning/development division terminal 6, repair division terminal 7, transport division terminal 8, quality control division terminal 9, and the like via a LAN (local area network) 3. The transport division terminal 8 is also connected to

a relay station 10, and can perform radio communication with a radio mobile terminal 11 via the relay station 10. Moreover, the Internet 1 is connected to a large number of client terminals 12 constituted of personal computers.

FIG. 2 is an explanatory view of operation of the repair request handling apparatus 2 when the client terminal 12 accesses the repair request handling apparatus 2. When there is an access to a home page set in the main server of the repair request handling apparatus 2 from the client terminal 12, first in S1 in the client terminal 12, a main menu of a question selection system is displayed in the accessed client terminal 12. In the main menu, as shown in FIG. 3, a display for asking a client to select introduction of a new product, acceptance of repair, or inquiry about usage is provided.

When the client selects/inputs the acceptance of the repair in this state, next in S2, as shown in FIG. 4, a display for selecting a repair object product, that is, a vacuum cleaner, juicer/mixer, oven/toaster, or the like is provided in the client terminal 12. In this state, for example, when there is a selection input of the vacuum cleaner from the client terminal 12, the repair request handling apparatus 2 reads machine types and product names of the vacuum cleaner from a vacuum cleaner database 21 and provides

a display for selecting the machine type and product name in the client terminal 12 as shown in FIG. 5 (first display control means).

5 Subsequently, when there is a selection input of the machine type and product name from the client terminal 12 in S3, a display of the question selection system for checking a trouble diagnosis and use state is provided in the client terminal 12 as shown in FIG. 6 (second display control means).

10 Subsequently, when there is a selection input with respect to questions from the client terminal 12 in S4, a trouble is identified based on trouble information of a trouble information database 22 with various types of trouble information stored therein (trouble
15 identification means). It is judged whether component replacement is necessary or unnecessary, or repair is unnecessary. Moreover, the identified trouble information is compiled in the trouble information database 22, and the information is updated.

20 Additionally, in this case, with the same trouble information as the trouble information already registered, the number of registrations is counted. The trouble information compiled in the trouble information database 22 is read mainly by the quality
25 control division terminal 9 and utilized in quality control of the product in a quality control division.

When the repair is unnecessary, a presentation is

made for the trouble in the client terminal 12 in S5.
This presents contents which can easily be handled
by the client, such as "change a paper bag", "leave
a machine to stand for one hour", "remove dust", and
5 "clean a brush", and asks the client to perform an
operation. For example, with presentation of "change
the paper bag", a display shown in FIG. 7 is provided
and, as a result, the client is asked to answer that
the machine "has recovered" or "has not recovered".
10 If the machine does not recover, the question selection
system for checking the trouble diagnosis or the use
state is displayed again. It is then judged based on
the trouble information of the trouble information
database 22 whether the component replacement is
15 necessary or unnecessary, or the repair is unnecessary.

When the component replacement is judged to be
necessary or unnecessary, an estimate of a cost
required for the repair, and a date of delivery are
calculated based on the identification of the trouble
20 and presented in the client terminal 12 in S6
(calculation means of estimate and date of deliver).

In this case, when the component replacement is
judged to be necessary, a service component stock
database 23 is referred to, and a stock situation of
25 a replacement component is checked.

When the replacement component is a mass-produced
component, a mass-produced component stock database 24

is referred to. When the replacement component does not exist as stock data in the service component stock database 23 or the mass-produced component stock database 24, a production plan database 25 is referred to for a production plan of the replacement component.

Additionally, the service component stock database 23, mass-produced component stock database 24, and production plan database 25 are updated by information inputted mainly from the manufacturing division terminal 5, and the updated information can always be supplied to the repair request handling apparatus 2.

Moreover, the estimate of the cost required for the repair and the date of delivery are displayed in the client terminal 12. Subsequently, for example, in a case in which two or more years have elapsed since purchase of the repair object product, or a certain period has elapsed since stop of production, new product information of the same product type as that of the repair object product is read from a new product database 26 and displayed in the client terminal 12 in S7. The new product information displayed in this case may be new product information of the same price group as that of the repair object product, or new product information of the cost group equivalent to a repair estimated amount of the repair object product.

A new product price of the new product database 26 is constantly adjusted by a latest market price

obtained from a market price database 27. The information of the new product database 26 and market price database 27 is updated by the sales division terminal 4. Moreover, when the repair object product
5 is in a free repair period and is relatively new, the display of the new product information is prohibited.

Subsequently, in S8, a display shown in FIG. 8 is provided in the client terminal 12 to ask the client to select whether or not the repair request is made,
10 or the purchase of the new product is desired (third display control means).

When there is a selection input of the repair request from the client terminal 12 in this state, a display for urging the input of client information, and
15 the like is provided in the client terminal 12 in S9.

The display for urging the input of an address, name, and telephone number of the client as the client information is provided as shown in FIG. 9, and the client is asked to input the information.
20 Subsequently, a display for urging the client to input a desired date for depositing the repair request product is provided as shown in FIG. 10, and the client is asked to input the date. Subsequently, a display for urging the input of a desired date of delivery of
25 the repaired request product is provided as shown in FIG. 11, and the client is asked to input the date.

The repair request handling apparatus 2 confirms

the input of the respective information such as the client information, desired date for depositing the repair request product, and desired date of delivery of the repaired product, and defines acceptance of the repair request. Subsequently, the apparatus transmits the respective accepted information such as the client information, desired date for depositing the repair request product, and desired date of delivery of the repaired product together with information of estimated amount and date of delivery to the repair division terminal 7 to instruct the division to repair the product. Moreover, the apparatus transmits the client information and information of repair component to the manufacturing division terminal 5. Thereby, the manufacturing division checks service component stock data of the service component stock database 23, mass-produced component stock data of the mass-produced component stock database 24, and production plan of the production plan database 25, secures the repair component, and informs the repair division terminal 7. Moreover, the manufacturing division transmits the respective information such as the client information, desired date for depositing the repair request product, and desired date of delivery of the repaired product to the transport division terminal 8. Thereby, a transport division goes to client's home to obtain the repair request product on the desired date, and

transports the obtained request product to a repair division. Additionally, a home delivery service company may perform this operation in place of the transport division.

5 The repair division checks the repair request product for a portion to be repaired anew, checks a stock state of the repair component informed by the manufacturing division via the repair division terminal 7, and arranges a repair operation plan. In this case, 10 when a cost required for the actual repair is different from an estimated amount, the repair request handling apparatus 2 is informed of the difference by the repair division terminal 7 via the LAN 3 in advance, and the repair request handling apparatus 2 contacts the 15 corresponding client terminal 12 to obtain a client's consent anew.

 The repair division finally defines the cost required for the repair in this manner, and the respective information such as the client information, 20 desired date for depositing the repair request product, and desired date of delivery of the repaired product together with the amount are compiled into a collection/delivery information/money collection information database 28. In this case, the 25 collection/delivery information compiled in the collection/delivery information/money collection information database 28 is stored, for example, as

a content of a list including the deposit date, name and address of the client, name of the repair request product, and the like as shown in FIG. 13.

Moreover, the repair division, having obtained a
5 supply of the repair component from the manufacturing
division, repairs the repair request product. Upon
completion of the repair, the repair division terminal
7 contacts the transport division terminal 8, and the
transport division obtains the repair request product
10 from the repair division and transports the product to
the client on the client's desired date of delivery.
In this case, a person in charge of delivery of the
transport division carries the radio mobile terminal
11, and money collection information is radio-
15 transmitted to the radio mobile terminal 11 from the
transport division terminal 8 via the relay station 10
during collecting of money from the client. The person
in charge of delivery performs the money collection
from the client in accordance with the money collection
20 information.

Additionally, examples of a client's payment
method include cash, further a debit card and credit
card, and with the debit card or the credit card,
payment can be achieved by disposing a card reader for
25 reading the card in the radio mobile terminal 11.

Moreover, when there is a selection input
indicating purchase of the new product from the client

terminal 12, a display for urging the input of the client information, and the like is provided in the client terminal 12 in S9. Subsequently, when the client inputs the client information of the address, name, and telephone number, and further inputs the desired date of delivery, the repair request handling apparatus 2 defines the acceptance of the purchase of the new product. In this case, the information of new product purchase, client information, and desired date of delivery are transmitted to the transport division terminal 8 of the transport division, and the transport division is to deliver the new product to the client and collect money on the desired date of delivery.

Furthermore, there is a selection input indicating that no repair request is made from the client terminal 12. In this case, a display for urging the selection as to whether or not the new product information is referred to is provided in the client terminal 12. There is a selection input indicating that the new product information is to be referred to, and in S10 the new product information of the same product type as that of the repair object product is read from the new product database 26 and displayed in the client terminal 12. Additionally, a display for selecting whether or not the purchase is required is also provided. Also in this case, the displayed new product information may be the new product information of the

same price group as that of the repair object product, or the new product information of the cost group equivalent to the repair estimated amount of the repair object product.

5 Moreover, when there is a selection input indicating the desire for the purchase of the new product from the client terminal 12, the display for urging the input of the client information, and the like is also provided in the client terminal 12 in S9.

10 Subsequently, when the client inputs the client information of the address, name, and telephone number, and further inputs the desired date of delivery, the repair request handling apparatus 2 defines the acceptance of the purchase of the new product. In this

15 case, the information of the new product purchase, client information, and desired date of delivery are transmitted to the transport division terminal 8 of the transport division, and the transport division is to deliver the new product to the client and collect money

20 on the desired date of delivery. Also in this case, the home delivery service company may perform this operation in place of the transport division.

 During the acceptance of the repair request and the new product purchase, the respective information

25 such as the client information, repair request product, and new product purchase inputted from the client terminal 12 are sent to and stored in the collection/

delivery information/money collection information
database 28.

Subsequently, when the acceptance is defined
by the selection input from the client terminal 12,
5 a questionnaire of the question selection system is
displayed in the client terminal 12 in S11, and the
client is asked to input answers to the questionnaire.
Moreover, when it is selected not to purchase the new
product in S10, the questionnaire of the question
10 selection system is displayed in the client terminal 12
in S11, and the client is asked to input answers to the
questionnaire. Furthermore, there is a selection input
indicating that the repair is not requested, and there
is a selection input indicating that new product
15 information is not referred to from the client terminal
12 in S8. In this case, immediately in S11, the
questionnaire of the question selection system is
displayed in the client terminal 12, so that the client
is asked to input the answer to the questionnaire.

20 The questionnaire of the question selection system
in S11 differs in content depending upon whether the
client has made a request for the repair, has desired
to purchase the new product, or has neither made the
request for the repair nor desired to purchase the new
25 product. When there is an answer to the questionnaire
from the client terminal 12, the repair request
handling apparatus 2 takes and compiles the answer into

a customer information database 29 and client demand database 30. Moreover, the answer is also compiled into the trouble information database 22.

5 The customer information database 29 compiles the information, for example, in the form of customer data shown in FIG. 12, and the information compiled in the database 29 is read and utilized mainly by the sales division terminal 4. The client demand database 30 compiles the information by demand, and the information
10 compiled in the database 30 is read and utilized mainly by the planning/development division terminal 6.

 An operation of the repair request handling system constituted as described above will be described with reference to a flowchart shown in FIG. 14.

15 First in S21, the client terminal 11 accesses the home page of the main server of the repair request handling apparatus 2. Thereby, a screen for selecting a desire to purchase the new product, make the repair request, or know a way of use is displayed in the
20 client terminal 12, and the client who desires to make the repair request selects an item indicating the desire to make the repair request. Thereby, the screen turns to a screen for the repair request, and the client operates the screen of the home page to input
25 the information necessary for the repair request of the trouble product. The repair request handling apparatus 2 accepts the repair request by the information input

in S22.

The repair request handling apparatus 2 having received the repair request uses the trouble information of the trouble information database 22 to diagnose the trouble of the repair request product and identify the trouble in S23, estimates a trouble portion and calculates estimated amount and date of delivery in S24, and uses the information of the service component stock database 23, mass-produced component stock database 24, and production plan database 25 to check the stock state and production plan of the replacement component in S25. Subsequently, the apparatus determines the date of delivery of the repair request product in S26. The apparatus identifies the trouble, stores new trouble data in the trouble information database 22, and updates the database.

Subsequently, the repair request handling apparatus 2 presents the estimated amount and date of delivery of the repaired product, and introduces the new product on the home page, and asks the client to select the desire to repair or not to repair the product, or to purchase the new product. Then, the client performs a selection operation on the home page, and it is determined in S27 that the repair is necessary or unnecessary or the new product is purchased. Additionally, when the repair is necessary, it is necessary to input the client information,

desired date for depositing the repair request product, and desired date of delivery. Moreover, when the new product is purchased, it is necessary to input the client information and desired date of delivery of the product.

It is determined that the repair is necessary or unnecessary or the new product is purchased, then in S28 the questionnaire of the question selection system is displayed on the home page, and the client is asked to answer the questionnaire. When there is an answer to the questionnaire, an answer result is compiled into the trouble information database 22, customer information database 29, and client demand database 30 in S29.

Moreover, it is judged whether the repair is necessary or unnecessary or the new product is purchased, then it is determined that the repair is necessary. In this case, in S30 the client information, the desired date for depositing the repair request product, and the desired date of delivery are stored in the collection/delivery information/money collection information database 28 and transmitted to the transport division terminal 8, and it is instructed to collect the repair request product. Moreover, when the repair is necessary, in S31 the client information and repair component information are transmitted to the manufacturing division terminal 5. Thereby, the

manufacturing division checks the service component stock data of the service component stock database 23, mass-produced component stock data of the mass-produced component stock database 24, and production plan data of the production plan database 25 via the manufacturing division terminal 5, and secures the repair component.

The repair division obtains the repair request product from the transport division in S32, then checks the portion to be repaired anew and calculates an actual product check estimate. Subsequently, in S33 the calculated estimate is transmitted and presented to the repair request handling apparatus 2.

The repair request handling apparatus 2 checks the actual product check estimated amount from the repair division in S34. When there is no difference from the first estimated amount, the estimated amount is defined as a repair price, and the repair is accepted in S35. Subsequently, the repair division uses the repair component obtained from the manufacturing division to repair the repair request product in S36. Upon completion of the repair, the repair division transfers the repaired product to the transport division, and the transport division delivers the repaired product on the client's desired date in S37, and collects the money from the client in S38, thereby ending a series of operation.

Moreover, when the repair is different from the first expected repair as a result of check of the portion to be repaired in the repair division, the repair component information is transmitted anew to the manufacturing division terminal 5 of the manufacturing division from the repair division terminal 7, and the manufacturing division secures the repair component anew. Subsequently, the repair division calculates the actual product check estimate anew in S32, and transmits and presents the calculated estimate to the repair request handling apparatus 2 in S33.

The repair request handling apparatus 2 checks the actual product check estimated amount from the repair division in S34, judges that the amount is different from the first estimated amount, and informs the corresponding client terminal 12 of that the actual repair price is different from the first estimated amount in order to obtain the client's consent anew.

Subsequently, when the repair request handling apparatus 2 informs the repair division terminal 7 of the obtained client's consent, the repair division accepts the repair in S35, and uses the repair component obtained from the manufacturing division to repair the repair object product in S36. Upon completion of the repair, the repair division transfers the repaired product to the transport division, and the transport division delivers the repaired product on the

client's desired date in S37, and collects the money from the client in S38, thereby ending the series of operation.

Moreover, when the actual repair price is
5 different from the first estimated amount, therefore the client's consent cannot be obtained, and the client withdraws the repair request, the repair is not accepted in S35, and the repair object product is returned in S37 in order to end the series of
10 operation.

Furthermore, when the new product purchase is determined, the client information and desired date of delivery are stored in the collection/delivery information/money collection information database 28
15 and transmitted to the transport division terminal 8, and it is to deliver the new product and collect the money. Thereby, the transport division is instructed to deliver the new product determined to be purchased
20 by the client to the client and collect the money on the desired date of delivery.

As described above, the client may operate its own terminal 12 to access the main server of the maker's repair request handling apparatus 2 and open the home page, and may perform the operation of the repair
25 request in accordance with the instruction on the home page, so that the client can easily make the repair request.

Moreover, during the operation of the repair request on the home page, the new product information of the same price group as that of the repair object product, or of the price group equivalent to the repair estimated amount is displayed on the home page, and the client is asked to purchase the product. When the client desires to purchase the new product because of breakage, the desire can be satisfied. That is, the new product purchase by the client is accepted and the product can be delivered. This can sufficiently enhance the service to the client.

Furthermore, when the maker accepts the repair request from the client via the repair request-handling apparatus 2, the securing of the repair component from the manufacturing division, indication of the desired date for collecting the repair request product and desired date of delivery to the transport division, and presentation of the estimated amount and date of delivery to the repair division can immediately be achieved via the respective terminals 5, 8, 7, so that repair business and repair operation can quickly be fulfilled.

As described above, according to the present invention, the client can easily make the repair request, the client's desire to purchase the new product because of the breakage can be handled if any, therefore the service to the client is sufficiently

enhanced, and the maker can quickly fulfill the repair business and repair operation.

5 As described above, the present invention is effective for a technical field of a repair request handling method and repair request handling apparatus in which Internet, and the like are used to accept a repair request from a client terminal and to perform a process corresponding to a repair.